X

PROGRESS REPORT

OF

THE FOREST SURVEY BRANCH

FOR

1885-86.

BY

W. H. REYNOLDS, Esq., F.R.G.S.,
OFFICIATING SUPERINTENDENT OF FOREST SURVEYS.

WITH REMARKS BY THE SURVEYOR GENERAL,

AND

WITH THE ORDERS OF THE GOVERNMENT OF INDIA.

CALCUTTA:
PRINTED BY THE SUPERINTENDENT OF GOVERNMENT PRINTING, INDIA.
1887.

No. 310F., dated Simla, 25th April 1887.

From—Sir E. C. Buck, Secretary to the Government of India, Revenue and Agricultural Department,

To—The Surveyor-General of India.

I am directed to acknowledge the receipt of your letter No. 2591S, dated the 10th December last, submitting the Annual Progress Report of the Forest Survey Branch for the season of 1885-86.

2. The chief operations of the Forest Survey Branch were, during the year under review, located in Berar and in Bashahr (Punjab).

The work in Berar is not restricted to the survey of forest property, but includes the cadastral survey of the whole country. This is in accordance with a special arrangement made with the local authorities, who pay for a portion of the survey from local revenues.

In addition to the major works in Berar and Bashahr, small parties were employed on the completion of the Kumaun and Garhwal surveys in the North-Western Provinces, on forest boundary surveys in Bengal, and on the survey of the Kalesar forests in the Punjab. Two native surveyors were placed under the direct orders of the Conservator of Forests in the Punjab, and completed during the year the sketch-map of the Chamba Forest Reserves. The survey of the Kalesar Forest Reserve was utilized in order to instruct the students of the Forest School. In all, 49 students passed through the elementary course.

3. The summary of work, as shown in Appendices A and B, is satisfactory.

The total area plane-tabled amounted to 607 square miles, 366 square miles having been surveyed on the 4″ scale and 241 square miles on the scale of 2″ to a mile. The Report should in future distinguish between the classes of areas surveyed, and should state whether they are forest property or otherwise. The outturn of the year compares favourably with the average of the last three years, which amounts to 346 square miles. The increase in the outturn has been steady. Triangulation has been completed over 849 square miles, which is sufficient for the next year's plane-table work.

4. The cost of the work in Berar compares favourably with that during the previous year. It amounted to Rs. 69 per square mile for the 4″ survey, and Rs. 49 per square mile for that on the 2″ scale, against Rs. 78 and 57, respectively, in 1884-85.

The survey included the same details that have been already noticed in the review of last year's Report, and are again mentioned in the Report under acknowledgment. The Governor-General in Council is pleased to notice that you are satisfied with the class of the survey executed, the depicture of the topography, and the cost of the work, and concurs with you in considering that credit is due to Mr. Reynolds for his management of the Forest Survey Branch.

5. The expenditure during the year amounted to—

	Rs.
Chargeable against Imperial Revenues	25,280
Against Berar Revenues	43,078
Total ...	68,358,

against Rs. 54,627 in 1884-85 and Rs. 48,156 in 1883-84.

No. 311F.

Copy forwarded to the Inspector-General of Forests, for information and for communication to the Superintendent of Forest Surveys.

G. C. B. Press, Simla.—No. 66 R. & A. D.—27-4-87.—250.

PROGRESS REPORT OF THE FOREST SURVEY BRANCH FOR 1885-86.

No. 2591-S., dated 10th December 1886.

From—Lieutenant-Colonel H. R. THUILLIER, R.E., Officiating Surveyor General of India.

To—The Secretary to the Government of India, Revenue and Agricultural Department.

I have the honour to forward herewith the Annual Report of the Superintendent of Forest Surveys for the year ending the 30th September 1886.

2. The Forest Survey Branch has been under the superintendence of Mr. W. H. Reynolds throughout the year under review, and has been employed in continuation of its operations in Berar, and in the survey of the Bashahr Forests in the Punjab, while small parties were engaged in boundary surveys in Bengal and in the North-Western Provinces. The outturn of area topographically surveyed was 607 square miles, of which 366 square miles were surveyed on the 4″ scale and 241 square miles on the 2″ scale. Preliminary triangulation has also been executed over a sufficient area for the detail surveys which are to be executed next season in Berar and Bashahr. The outturn of the field work compares favourably with that of the past three years.

3. The cost per square mile has been estimated on the area plane-tabled in Berar only, and is for the 4″ Survey R69 and for the 2″ Survey R49. These rates—considerably lower than last year's—include cost of triangulation, traversing, level contours at vertical intervals of 300 feet, and all office work connected therewith and with the mapping. They are moderate and considerably lower than those of last year, which were R78 and 57 respectively. The rates for the Bashahr Survey could not be estimated, as the party was still employed in the field, and all the details of this work had not been completed.

4. I had an opportunity of inspecting some of the field sections of the Berar and Bashahr Surveys, and, judging from the closeness of the traverses and of the plane-table fixings, found that the ground had been very carefully surveyed. The topography appeared to be effectively depicted.

5. I consider the Report to be in all respects very satisfactory, and that credit is due to Mr. Reynolds for his management.

Annual Progress Report of the Forest Survey Branch of the Forest Department, from 1st October 1885 to 30th September 1886; by W. H. REYNOLDS, Esq., F.R.G.S., *Officiating Superintendent of Forest Surveys: dated 15th November 1886.*

THE SEASON'S FIELD WORK.

Mr. W. H. Reynolds, Officiating Superintendent of Forest Surveys, held charge of the Forest Survey Branch throughout the year, and conducted Survey operations in Berar, the Punjab, Bengal, and the North-Western Provinces. In Berar, field work was carried on in the Gugumal and Bairagarh Forest Reserves, as well as in the Katkumb and Katkali Parganas of the Melghát; in the Punjab, field operations were carried on in the leased forests of Bashahr, and in the Kalesar Forests of the Umballa District; in Bengal, field work was confined

to the Reserved Forests in the Singbhum District; and in the North-Western Provinces, forest boundary surveys were carried on in the Districts of Saharanpur and Garhwal. All the foregoing surveys are being done on the 4″ and 2″ scales, and are executed on a trigonometrical basis. To illustrate the amount of trigonometrical and traverse data upon which these surveys are based, a chart of triangulation and traversing is attached to this Report and marked 1.

Duration of Field Season.

2. The parties working in Berar, Bengal, and the North-Western Provinces took the field early in November, and returned to recess quarters by the middle of June. The Punjab-Bashahr party took the field about the middle of May, and was still engaged upon field work at the close of the Survey year (30th September).

Berar, Melghát Party.

3. The Melghát survey party, which was the largest in the field, worked under the immediate supervision of Mr. Reynolds; it took the field on the 14th November, and closed field work on the 15th June. It was divided, for plane-table purposes (and to ensure closer supervision over the detail surveyors), into three sections, two of which were composed of a European Assistant and several Native surveyors, and the third was composed entirely of Native surveyors. Section No. 1, under Mr. Litchfield, Officiating Deputy Conservator of Forests, worked chiefly in the Gugumal Forest Reserve, and the detail survey was confined to the 2″ scale. The 2nd section, under Mr. Chill, which worked on the 4″ scale, surveyed the greater part of the Katkumb Pargana in sheet No 26. The 3rd section, which was composed entirely of Native surveyors, worked under Bhoop Singh, a most promising surveyor, and surveyed, on the 4″ scale, part of the Katkumb Pargana, as well as the northern portion of the Bairagarh Reserve. In addition to the three sections of detail plane-table surveyors, there was a triangulating and a traverse party working in the western portion of the Melghát, and also a computing party. The triangulation, traversing, and computations were done entirely by Native agency, under the personal direction and supervision of Mr. Reynolds. The areas triangulated and traversed in advance are sufficient to provide for next season's plane-table work. Attached to this Report is an index map of the Melghát, marked 2, which illustrates the areas topographically surveyed, as well as those triangulated and traversed up to the close of the season 1885-86.

Bashahr, Punjab.

4. In the correspondence ending with the Government of India, Revenue and Agricultural Department, letter No. 610S, dated 8th December 1885, it was ruled that any detailed survey that the Forest Department may wish to have executed by its own survey party should be reserved. Hence the detailed survey of the forest tracts of Bashahr, which were triangulated in the previous season, was commenced by the Forest Survey Branch as soon as the melting of the snow allowed of a survey party working in the remote Himalayan tracts in the neighbourhood of Chini. The Bashahr survey party, which is composed entirely of Native surveyors, left Dehra on the 18th May, and commenced work at Chini on the 10th June: the party is still in the field. Mr. Reynolds inspected the work and fully arranged the details of the survey between the 3rd July and 15th August. The tracts topographically surveyed during the summer of 1886, as well as those already triangulated, are shown on the Bashahr index map, which is attached hereto and marked 3. The area triangulated in advance is sufficient to provide for next season's plane-tabling.

Kalesar, Punjab.

5. The survey of the Kalesar Forests was commenced early in November. It was taken up partly as a training ground in surveying for the students at the Forest School, and 49 students went through a practical course in surveying while the survey of

the forests was in progress. The ground was triangulated by Mr. Reynolds between the 1st and 23rd November, and, on Mr. Reynolds' departure for Berar, the plane-tabling was undertaken by Mr. James Marten and a party of four Native surveyors. The Forest School students were left under the charge of Mr. J. Copeland, Assistant Conservator of Forests. The survey of the Kalesar Forests was completed on the 1st April; the field parties then returned to Dehra.

Chamba, Punjab.

6. The two Native surveyors who were employed in Chamba, under the local Forest Officer, since July 1884, returned to Dehra on the 21st December 1885, after completing the surveys they had in hand.

Singbhum, Bengal.

7. Orders having been received to survey the boundaries of the forests in the Singbhum District of Bengal, Mr. T. S. Marten, with a detachment of Native surveyors, left Dehra on the 3rd November, and commenced work in the Singbhum Forests on the 24th; early in January the party was strengthened by an additional hand from the Punjab. The party continued working in the field until the 25th April, and then returned to Dehra. Mr. Reynolds inspected the work between the 22nd February and 5th March. An index map is attached (marked 4), which illustrates the progress of the work after the close of the season.

Garhwal, North-Western Provinces.

8. The survey of the forest boundaries in the Ganges Division, which was left unfinished the previous season (owing to the demarcation being in a backward state), was completed by a small detachment of Native surveyors between the 9th April and 20th May.

Saharanpur, North-Western Provinces.

9. On the 3rd June, a Native surveyor was deputed to the Saharanpur Division, to survey the *raus* along the submontane road between the Jumna and the Ganges, in connection with the annual levelling operations by the Forest School students, which was ordered last autumn, to ascertain the effect of protecting certain areas in the Siwaliks against fire. The levelling operations were supervised by Mr. J. Copeland, Assistant Conservator of Forests, and the work was completed by the end of June.

Abstract of Field Work. Plane-tabling or detailed survey

10. Appendix A contains a summary of the outturn of field work done during the year. The total area plane-tabled was 608 square miles; of this area, 367 square miles were surveyed on the 4″ and 241 square miles on the 2″ scales. The details are as follows:—

On the 4″ scale—

in Melghát, Berar	. . . .	162 square miles
in Bashahr, Punjab	. . . .	114 „
in Kalesar, „	. . . .	30 „
in Singbhum, Bengal	. . . .	61 „

and on the 2″ scale, in Berar, 241 square miles. Also 488 linear miles of forest boundaries were plane-tabled, *viz.*:—

in Singbhum, Bengal	. . .	416 miles
in Garhwal, North-Western Provinces	.	63 „
in Saharanpur, „	.	9 „

The outturn of detailed survey—*viz.*, 608 square miles—compares favourably with the outturn for the past three years, which was as follows:—

1881-82	. . . .	265 square miles
1882-83	. . . .	361 „
1884-85	. . .	411 „

Triangulation.

11. The total area triangulated was 849 square miles, of which 410 square miles are in Berar and the balance in the Punjab.

Eight hundred and sixty-seven stations were fixed, giving an average of about one trigonometrical point to every square mile of country.

Traversing.

12. Six hundred and ninety-five linear miles of traversing were run over an area of 874 square miles, giving 10,765 fixed points.

Heights by tangent scale clinometer.

13. Two thousand and seventy-eight observations were made with the tangent scale clinometer, to determine heights of points above sea-level.

Forest-growth record, &c.

14. The record of forest growth was prepared as usual for forest tracts; and for the non-forest areas in Berar, which are being surveyed cadastrally, the usual register of fields or holdings was kept.

Office Work.

Computations.

15. An abstract of the outturn of computations will be found in Appendix A. The rectangular co-ordinates of 6,079 traverse stations, situated on 569 linear miles of traversing, were computed in duplicate. The number of triangles computed in duplicate was 2,112, whereby 1,325 trigonometrical points were fixed. To determine the heights above sea-level of 590 stations, 987 triangles were worked in duplicate. The latitudinal and longitudinal values of 187 stations of the Great Trigonometrical Survey were converted into rectangular co-ordinates, and 1,679 clinometric heights were computed in duplicate. All the computations are sufficiently advanced to provide for the coming season's field work.

Map-drawing. North-Western Provinces and Oudh.

Kumaun and Garhwal.

16. Appendix B gives a summary of the original drawings under preparation during the year. Of the twelve 4″ maps of the Kumaun and Garhwal Survey reported as being in progress last year, the following sheets have been published:—

Nos. IIIA, IIIB, IV, V, LXIX, LXX, LXXI, and LXXIV; Sheets Nos. VI, VII, XI, XIV, XXIV, XXIX, XLIII, LXXIII, and LXXV are in progress, and No. LXXVIII is in the press. Kumaun and Garhwal sheet No. II, on the 2″ scale, and a map of the Ganges working circle, on the scale of 1″=1 mile, have also been published. Five charts of triangulation and traversing of the Kumaun and Garhwal Survey, on the scale of 1″=1 mile, are in progress—*viz.*, I, II, IV, VI and VIII; and Nos. V and VII, on the scales of 1″=1 mile and ½″=1 mile, have been published. A specimen sheet (Chart No. V) is attached to the Report and marked 1.

Tiri-Garhwal.

17. Sheets Nos. I, II, and III of the Bhagirathi Forests in Tiri-Garhwal, as well as sheet No. III of the leased forests of Deota and Lambatach, all on the 4″ scale, have been published.

Oudh.

18. Of the Oudh Forests, a map of the Reserved Forests in District Bahraich, and a map of the Reserved Forests in Districts Kheri and Pilibhit, both on the 4 miles =1″ scale, have been passed through the press, as well as a map of the Kapurthala Forests in District Bahraich, scale ½″ = 1 mile. A map of the Puranpur Reserved Forests in District Pilibhit, on scale of 1″=1 mile, is in progress.

Punjab.

19. For the Punjab, a contoured map of the Kalesar Forests, sheet No. 336 $\frac{N.\ W.}{3}$, on the scale of 4″=1 mile, is in progress; and a map of the Changa Manga Planta-

tions, on the scale of 4″=1 mile, to illustrate the working-plans of 1886, is also in progress.

Bengal, Singbhum.

20. The following sheets of the Singbhum boundary survey, on the scale of 4″=1 mile, have been published:—Nos. 157 $\frac{8.E.}{1}$ and 157 $\frac{8.W.}{2}$ (these same sheets have been published on the 1″ scale); sheet No. 157 $\frac{8.W.}{4}$ is in the press, and ten 4″ sheets of the Chota Nagpore Forests in District Singbhum are in progress. An index map to the Forest Survey of Singbhum, on the scale of 1″=4 miles, has also passed through the press. The index map is appended and marked 4; specimen copies of sheet No. 157 $\frac{8.W.}{3}$, on the scales of 4″ and 1″=1 mile, and marked respectively 5 and 6, are also appended to this Report.

Berar.

21. For Berar, a revised edition of the Ellichpur Taluk map, showing the classification of District Forests, on the 1″ scale, was published; and the following contoured maps, on the 4″ scale, have also been published:—map of the Chikalda plateau, including Forest Reserves and adjacent villages (this map is appended to the Report and marked 7); map of the villages of Gondwahir, Masona, Najarpur, Bhilkhera, and Pandri in the Melghát Taluk (part of sheet No. 27); a map containing the village lands of Chichkhera and Kulangana in the Melghát (part of sheet No. 20); and a map, in three sheets, of the Guru Matergaon Forests in South Berar. An index map of the Melghát, on the scale of 1″=8 miles, has also passed through the press. A contoured map, on the 4″ scale, of the villages of Bhilkhera and Soarpani (part of sheet No. 20) has been sent to press.

The following contoured maps of the Melghát, on the 4″ and 2″ scales, are in progress, *viz.*:—

Sheet No. 20 S. E.
„ No. 20 S. W.
„ No. $\frac{20}{A}$ N. E.
„ No. 27 N. W.
} Scale 2″=1 mile;

and on the 4″ scale, part of sheet No. 20, containing the villages of Gowlkhera and Bhopapur, and part of sheet No. $\frac{20}{A}$, containing the villages of Opadkhera and Thapjhera.

Tracings and other miscellaneous work.

22. For the Forest Department and various District Officers, 80 tracings were made, 418 printed maps were cut up and mounted in book form, and 2,101 printed maps were coloured. The areas of all the fields in the villages of Silona and Gowlkhera, in the Melghát Taluk, were deduced.

Maps for the London Exhibition of 1886.

23. For the London Exhibition of 1886, a set of 297 maps, in connection with forests, were prepared, comprising general, provincial, and other maps mounted on rollers, as well as detailed and special maps of the North-Western Provinces and Oudh Forest Circles, the Punjab, Central Provinces, Bengal, Assam, Berar, Ajmere and Merwara, Coorg, British Burma, and the Trans-frontier. A list of the maps is attached to this Report as Appendix C. At the Edinburgh International Forestry Exhibition of 1884, a silver medal was awarded for the Forest Survey maps.

Imperial Expenditure.

24. Appendix D exhibits the expenditure for the year, on field and office work, in Kumaun and Garhwal, Saharanpur and Tiri-Garhwal, in the North-Western Provinces; Singbhum, in Bengal; and Bashahr and Kalesar, in the Punjab; as well as charges for work not connected with these surveys. In Kumaun and Garhwal an expenditure of ₹1,046 was incurred, chiefly in preparing the fair sheets of the survey for publication; in connection with the Saharanpur and Bhagirathi Forests, a sum of ₹64 was expended on field and office work.

In Singbhum the cost of the field work was R4,428, and the office work cost R747; the expenditure on field and office work in the Himalayas in Bashahr was R2,869; while the cost of field and office work of the Kalesar survey was R2,665. A sum of R1,145 was paid to the Survey of India Department for photozincographing original fair sheets and supplying printed maps to the Forest Survey Branch (*vide* Government of India, Revenue and Agricultural Department, Circular No. 178.—2-6, dated 23rd February 1886). The total cost of field and office work on Imperial Forest Surveys, including all expenditure, was R25,280.

Berar Expenditure.

25. In Berar a sum of R17,181 was expended on triangulation, traversing, detailed plane-table surveys (on 4″ and 2″ scales), and other field work; while the office work, comprising computations, plotting, drawing, &c., cost R6,021. For photozincographing original drawings and supplying printed maps of Berar to the Forest Survey Branch, the sum of R408 was transferred to the Survey of India Department. The total expenditure in Berar, during the Survey year ending 30th September 1886, was R43,078. A summary of the expenditure is given in Appendix E.

Cost of Work per square mile. Berar.

26. Last year it was reported that the cost per square mile of the 4″ surveys in Berar was R78, while the surveys on the 2″ scale cost R57; during the year under report the cost per square mile of the season's work, estimated on the total area plane-tabled, is for surveys on the 4″ scale R69, and for the 2″ work R49. This rate includes cost of close triangulation, traversing, computations, plane-tabling, measuring of level contours, preparation of fair maps for publication, &c.—in fact all details which were noted in paragraph 23 of last year's Report. A specimen sheet of the work is attached to this Report and marked 7.

Punjab, Bashahr.

27. In the remote Himalayas of Bashahr, the cost up to date of the triangulations, including computations, has been R3, and plane-tabling R25, per square mile. It is not possible to give the final cost per square mile (as was done for Berar, which includes every detail of the work), as the Bashahr party only commenced plane-table work in June and the party is still in the field. It is probable, however that the final cost-rate of the Himalayan Forest Surveys of Bashahr will, be lower than the cost-rate per square mile of the Berar Surveys. Mr. Reynolds availed himself of the opportunity, whilst passing through Simla in August, to lay before the Surveyor General one of the contoured field-sheets of the Bashahr survey, as well as some of the Berar field-sheets.

Singbhum, Bengal.

28. The boundary surveys of the forests in the Singbhum District of Bengal cost, including traversing, computations, detail 4″ survey of a strip of country 10 chains wide along all boundary lines, and the drawing of fair sheets for publication, &c., something under R11 per linear mile. A specimen map of the Singbhum boundary surveys is appended to this Report and marked 5.

Contoured Surveys. Levelled Contours by tangent scale clinometer.

29. It might be noted here that, with the exception of the small area in Bengal, all the detailed surveys done by the Forest Survey Branch, during the year under report, are contoured surveys. In Berar, contours were measured, on both the 4″ and 2″ scales, at 300 feet vertical distances, whilst in Kalesar and Bashahr, in the Punjab, the contours were measured at 250 and 500 feet respectively. The forests under survey in the remote Himalayan tracts of Bashahr are situated at elevations between 6,000 and 14,000 feet above sea-level; and as the Himalayas are much steeper than the hills of Berar, it was deemed advisable to measure the contours in the Bashahr Survey at greater intervals; hence 500 feet vertical distance was adopted. The instrument used for determining levelled contours was the tangent scale clinometer, and, in the opinion of the Officiating Super-

intendent, this small and portable instrument far surpasses the water-level for work of this sort. The tangent scale clinometer was introduced into the working of the Forest Surveys in 1884, to take the place of the aneroid barometer as well as the water-level. A map (part of sheet No. 20 of Berar) is attached, as a specimen of the season's work, and is marked 7.

Boundary Surveys, Bengal.

30. In Singbhum (Bengal), the area plane-tabled was not contoured, but comprised an ordinary topographical survey of strips of country, 10 chains wide, along the lines of boundary. The boundaries were also traversed in the usual way, and numerical data for all forest boundary pillars have been deduced and are now available, so that the boundaries can be plotted hereafter to any desirable scale, large or small, according to the requirements of the case. Two sets of maps have been prepared, one on the 4″ and the other on the 1″ scales. A specimen sheet of each of these maps is attached to this Report; they are marked 5 and 6. The map on the 4″ scale is intended as a boundary record, to be bound up with the "Register of Reserves," while the smaller scale map is intended to supplement the existing 1″ map of the Topographical Survey. As the work progresses, copies of the 1″ map will be submitted to the Surveyor-General, to enable him to post up the Topographical Survey maps with reference to forest boundaries.

Fitting of Forest Survey Maps to General Survey of India.

31. The latitudinal and longitudinal limits of the Forest Survey sheets are now made to correspond to the limits of the standard sheets of the Survey of India Department, and the Surveyor General's numbering of the provincial map sheets has also been adopted; and hence there can never be any difficulty in fitting the work of the Forest Surveys to the maps of the General Survey of India.

Instruction of Students of the Forest School.

32. Forty-nine students of the Forest School (probationers in the Forest Department and Forest Rangers, &c.) went through a course of instruction in practical surveying in the Kalesar Forests, between the 17th November 1885 and 5th February 1886, having gone through a theoretical course (including map-drawing and the use of mathematical instruments) during the School session of 1885. Of these 49 students, 21 have passed the final examinations test, and have received certificates as having qualified in surveying by the lower standard of the Forest Department. The balance of the second year's students are still undergoing their final examination in field surveying, and it is expected that most of them will shortly receive the same certificate.

Thirty-four new students of 1886 attended the surveying classes, which were commenced on the 15th July; they went through the same course as the students of the previous year, and during the coming open season they will be taught practical surveying in the Dehra Dun Forests. The instruction in practical surveying has been entrusted to Dr. Warth, Instructor at the Forest School. Last season Mr. Copeland, Assistant Conservator of Forests, took the surveying classes in their practical field instruction, and the satisfactory results prove that he devoted himself arduously to his work. Mr. Copeland was employed upon special survey duty with the Forest School students from 28th October 1885 to 13th February 1886.

Examination of Forest Officers and candidates for the superior grades of the Forest Department.

33. The surveying papers of Mr. Watson, Assistant Conservator of Forests in the Central Provinces, as well as the papers of three candidates for appointments in the Punjab and one for Bengal, were examined by the Officiating Superintendent. The papers were up to the required standard, and certificates

were awarded of qualifications in surveying by the lower standard, as laid down in paragraph 52 (3rd edition) of the Forest Department Code.

Officers of the Superior Staff.

Mr. W H Reynolds, Officiating Superintendent of Forest Surveys.

34. Throughout the year under report, Mr. Reynolds directed and controlled the entire field operations of the Forest Survey Branch in the North-Western Provinces, Punjab, Bengal, and Berar, as well as the head-quarters office work at Dehra Dun. The Kalesar Forests were triangulated by him, and he visited each of the field parties in the several provinces and scrutinised the work. During the Forest School session of 1886, in addition to his ordinary duties, Mr. Reynolds supervised the surveying classes, and towards the close of the session he held a final examination and awarded certificates to such of the students as were qualified in surveying. Between the 1st November and middle of December, Mr. Reynolds was with the Kalesar Survey; on the 15th December he left for Berar, and continued with the Berar Survey until 22nd February; he then visited the Bengal party, and returned to Berar on the 12th March; between the 2nd and 6th April he visited Nagpur, to consult with the Conservator of Forests regarding forest demarcation and surveys in the Central Provinces. Early in June Mr. Reynolds returned to Dehra, and between the 1st July and 15th August his time was devoted to organising and conducting the Forest Surveys in the remote Himalayan tracts of Bashahr in the Punjab; on the 15th August he returned to head-quarters.

Mr. E. F Litchfield, Officiating Deputy Conservator of Forests.

35. Mr. Litchfield took the field early in November, and returned to recess quarters on the 15th June; he was employed during the field season in plane-tabling the Gugumal and Bairagarh Forest Reserves in sheet No. 20, as well as the country immediately to the south and west of Gugumal. He did a very satisfactory field season's work. Mr. Litchfield went on two months' privilege leave from 2nd September.

Forest Surveyors.

Mr. G. P. Chill.

36. Mr. Chill left Dehra for Berar on the 29th October, and, after plotting his field sections in the Chikalda office, he commenced field work on the 14th November; he was employed throughout the field season on plane-tabling; during the early part of the season, he worked in the Katkumb Pargana, and later on he took up the survey of the eastern portion of the Bairagarh Reserved Forest; he returned to recess quarters on the 16th June. During the recess months Mr. Chill was employed in drawing fair sheet No. 20 S. W. of the Melghát.

Mr. T. S. Marten.

37. Mr T. S. Marten was employed throughout the field season on forest boundary surveys in the Singbhum District of Bengal; he left Dehra on the 3rd November and commenced work in the Singbhum forests on the 19th; he continued in the field until the 25th April, by which date several of the boundary surveyors having been disabled by fever, and water having become scarce in the forests, he returned to Dehra on the 4th May. Under trying circumstances, Mr. Marten turned out a very satisfactory field season's work; he is a quick worker, and is practically good in managing and getting on with Natives. He was employed during the recess months in plotting and drawing the fair sheets of his season's field work, and in putting a section of the Forest School students through their preliminary course in surveying.

Mr. James Marten.

38. Mr. James Marten took the field somewhat later than others, owing to his having been detained at Dehra to complete the set of maps that were prepared for the London

Exhibition of 1886. He left Dehra on the 17th December, and was employed in plane-tabling the Kalesar Forests; he completed the survey of the forests on the 1st April, and then returned to head-quarters. During the recess months he was employed in drawing the Kalesar Forest map, and in posting up information on the Provincial Forest Maps; he also taught surveying and drawing to a section of the first year's Forest School students, and assisted generally in other work in the drawing office. Mr. James Marten has done much good work; he is very energetic and steady, and is deserving of advancement.

Sub-Surveyors.

39. The average monthly strength of the Native establishment employed on each kind of work during the field season was :—

Triangulation	1
Traversing	5
Plotting, &c.	3
Computing	4
Plane-tabling	12
In field	25
At head-quarters	12
Total	37

On the whole, the Native establishment worked willingly and well, and turned out work of an excellent quality. The following men deserve special mention, *viz.* :—

Salig Ram for his triangulations, Badri Dutt for computations, Bhoop Sing for plane-tabling, Oodey Sing for traversing, Kali Kanth Kar for miscellaneous office work, Tulsi Ram for map-drawing.

Health of the Establishment.

40. After the hot weather had fairly set in (in April), the Singbhum party suffered much from fever, and consequently it became necessary to recall the party from the forests earlier than usual; during the early part of the field season, the Melghát party in Berar also suffered a good deal from fever. I would note here that the tracts of country which are usually selected for survey by the Forest Survey Branch are those which are most densely wooded and have been set aside as Forest Reserves; they are, as a rule, feverish tracts, far from villages, and supplies and carriage are difficult to obtain; water also, after the hot weather sets in, becomes scarce in many of the Reserved Forests (notably those of Berar, Bengal, and the North-Western Provinces), and consequently Forest Surveyors are often obliged to undergo great hardships: hence their health fails sooner than the health of surveyors whose lot is cast in healthy, populous, and civilised tracts. Nevertheless, the establishment, both European and Native, continue to work cheerfully and well.

Work done by the Survey of India for the Forest Surveys.

41. The Forest Survey maps continue to be photozincographed at the office of the Trigonometrical Branch of the Survey of India, and other miscellaneous work in the way of printing, &c., is often undertaken for the Forest Surveys by this office. The Officiating Superintendent of Forest Survey as much pleasure in acknowledging the advantages he has enjoyed owing to the kindness and courtesy of Colonel Haig, Deputy Surveyor General, in charge of the Trigonometrical Survey Office; the work undertaken in Colonel Haig's office has always been executed promptly and in a most satisfactory manner.

42. The following documents are submitted with this Report, *viz* :—

1. Chart of Triangulation of the Government Forests in the Districts of Kumaun and Garhwal, sheet No. V, scale 1″=2 miles.
2. Index Map to the Forest Survey of Melghát Taluk, Berar, scale 1″= 8 miles.
3. Index Map to the Forest Survey of Bashahr, Punjab, scale 1″=4 miles.
4. Index Map to the Forest Survey of Singbhum, Chota Nagpore, Bengal, scale 1″=4 miles.
5. Bengal, Chota Nagpore, Singbhum District, sheet No. 157 $\frac{NW}{2}$, scale 4″= 1 mile.
6. Bengal, Chota Nagpore, Singbhum District, sheet No. 157 $\frac{NW}{2}$, scale 1″= 1 mile.
7. Specimen Map of the Berar Survey, Melghát Taluk, part of sheet No. XX, scale 4″=1 mile.
8. Appendix A—Summary of outturn of field work and computations.
9. Appendix B—Summary of outturn of drawing and miscellaneous work.
10. Appendix C—List of Maps prepared for the London Exhibition of 1886, by W. H. Reynolds, Esq., F.R.G.S., Officiating Superintendent of Forest Surveys.
11. Appendix D—Summary of Expenditure from 1st October 1885 to 30th September 1886, showing the amounts expended on Field and Office Work (Imperial).
12. Appendix E—Summary of Expenditure from 1st October 1885 to 30th September 1886, showing the amounts expended on Field and Office Work (Berar).
13. Annual Form No. 58—Summary of Revenue and Expenditure (Imperial Surveys) during the Financial year.
14. Annual Form No. 58—Summary of Revenue and Expenditure (Berar Surveys) during the Financial year.
15. Annual Form No. 59—Account Current.
16. Annual Form No. 61—Revenue received and Outstandings on account of Revenue.

APPENDIX A.

Summary of Outturn of Field Work and Computations by the Forest Survey Department, from 1st October 1885 to 30th September 1886.

No.	North-Western Provinces, Punjab, Bengal, and Berar Surveys.		Amount.	Remarks.
	Plane-tabling.			
1	Area plane-tabled on the scale of 4″ = 1 mile—			
	(*a*) Kumaun and Garhwal—N.-W. P. (boundary survey)	63·47	71·97	Linear miles.
	(*b*) Saharanpur—N.-W. P.	8·50		
	(*c*) Melghát—Berar	162		
	(*d*) Bashahr—Punjab	114		
	(*e*) Kalesar—Punjab	29·13		
	(*f*) Singbhum—Bengal	61		
		366·13		
	Area plane-tabled on the scale of 2″ = 1 mile—		607·13	Square miles.
	Melghát—Berar	241		
	Triangulation.			
2	Area triangulated—			
	(*a*) Melghát—Berar	410	849	Ditto.
	(*b*) Bashahr—Punjab	404		
	(*c*) Kalesar—Punjab	35		
3	Number of points fixed—			
	(*a*) Melghát—Berar	461	867	
	(*b*) Bashahr—Punjab	353		
	(*c*) Kalesar—Punjab	53		
	Traversing.			
4	Area traversed—			
	(*a*) Melghát—Berar	458	874	Ditto.
	(*b*) Singbhum—Bengal	416		
5	Number of linear miles traversed—			
	(*a*) Melghát—Berar	209	695	
	(*b*) Singbhum—Bengal	486		
6	Number of traverse stations—			
	(*a*) Melghát—Berar	1,953	10,765	
	(*b*) Singbhum—Bengal	8,812		
	Computations.			
7	Number of linear miles of traversing in duplicate—			
	(*a*) Melghát—Berar	209	569	
	(*b*) Singbhum—Bengal	360		
8	Number of traverse stations computed in duplicate (rectangular co-ordinates)—			
	(*a*) Melghát—Berar	986	6,079	
	(*b*) Singbhum—Bengal	5,093		

No.	North-Western Provinces, Punjab, Bengal, and Berar Surveys.	Amount.	Remarks.
9	Number of triangles worked in duplicate—		
	(*a*) Melghát—Berar . . . . 1,301 (*b*) Bashahr—Punjab . . . . 724 (*c*) Kalesar—Punjab 87	2,112	
10	Number of points fixed thereby—		
	(*a*) Melghát—Berar . . . . 919 (*b*) Bashahr—Punjab . . . . 353 (*c*) Kalesar—Punjab 53	1,325	
11	Number of triangles worked in duplicate to determine heights—		
	(*a*) Melghát—Berar . . . . 107 (*b*) Bashahr—Punjab . . . . 782 (*c*) Kalesar—Punjab 98	987	
12	Number of points of which the heights were determined thereby—		
	(*a*) Melghát—Berar . . . . 215 (*b*) Bashahr—Punjab . . . . 332 (*c*) Kalesar—Punjab 43	590	
13	Abstract of horizontal angles in duplicate . . .	2,326	
14	Number of G. T. Survey Stations computed in duplicate—		
	(*a*) Melghát—Berar . . . . 116 (*b*) Kalesar—Punjab . . . . 9 (*c*) Singbhum—Bengal 62	187	
15	Number of tangent scale clinometer observations—		
	Melghát—Berar	2,078	
16	Number of heights determined by tangent scale clinometer—		
	Melghát—Berar	1,679	

APPENDIX B.

Summary of Outturn of Drawing and Miscellaneous Work executed by the Forest Survey Department, from 1st October 1885 to 30th September 1886.

No.	Particulars.	No. of Sheets.	Remarks.
	ORIGINAL DRAWINGS.		
	North-Western Provinces and Oudh.		
1	Kúmaun and Garhwal Sheets, scale 4″=1mile (in progress), Nos. VI, VII, XI, XIV, XXIV, XXIX, XLIII, LXXIII, LXXV, and LXXVIII. (No. LXXVIII sent to press.)	10	
2	Kumaun and Garhwal, Sheet No. II, scale 2″=1 mile (published).	1	
3	Chart of Kumaun and Garhwal Triangulation, scale 1″=1 mile (in progress), Nos. I, II, IV, VI, VIII.	5	

No.	Particulars.	No. of Sheets.	Remarks.
4	Index Chart of field sheets of Kumaun and Garhwal Survey, scale 1″=4 miles (in progress).	1	
5	Map of the Ganges Working Circle, showing blocks and compartments, scale 1″=1 mile (published).	1	
6	Maps of the Bhagirathi Forests in Tiri-Garhwal, scale 4″=1 mile, Nos. I, II, and III (published).	3	
7	Map of Deota and Lambatach Forests, in Tiri-Garhwal, scale 4″=1 mile, Sheet III (published).	1	
8	Map of the Reserved Forests in District Bahraich, Oudh, scale 4 miles=1″ (published).	1	
9	Map of the Reserved Forests, in Districts Kheri and Pilibhit, Oudh, scale 4 miles = 1″ (published).	1	
10	Map of Kapurthala Forests, in District Bahraich, Oudh, scale 1″=1 mile, reduced to ½ scale or ½″=1 mile (published),	1	
11	Map of Puranpur Reserved Forests, District Pilibhit, Oudh, scale 1″=1 mile (in progress).	1	
	Punjab.		
12	Map of the Kalesar Forests, Sheet No. 336 $\frac{\text{N. W.}}{8}$, scale 4″=1 mile (in progress).	1	
13	Map of Changa Manga Plantation, to illustrate Working Plan, 1886, scale 4″=1 mile (in progress).	1	
	Bengal.		
14	Maps of the Government Forests in the Chota Nagpore Division, Singbhum, Sheets Nos. 126 $\frac{\text{S. E.}}{2}$, 126 $\frac{\text{S. E.}}{3}$, 126 $\frac{\text{S. E.}}{4}$, 127 $\frac{\text{N. E.}}{1}$, 127 $\frac{\text{N. E.}}{2}$, 127 $\frac{\text{N. E.}}{3}$, 157 $\frac{\text{N. W.}}{1}$, 157 $\frac{\text{N. W.}}{3}$, 157 $\frac{\text{S. W.}}{3}$, 157 $\frac{\text{S. W.}}{4}$, scale 4″=1 mile (in progress). (Sheet No. 157 $\frac{\text{S. W.}}{4}$ sent to press.)	10	
15	Maps of the Government Forests in the Chota Nagpore Division, Singbhum, Sheets Nos. 157 $\frac{\text{S.E.}}{1}$, 157 $\frac{\text{S. W.}}{2}$, scale 4″=1 mile (published).	2	
16	Maps of the Government Forests in the Chota Nagpore Division, Singbhum, Sheets Nos. 157 $\frac{\text{S.E.}}{1}$, 157 $\frac{\text{S. W.}}{2}$, scale 1″=1 mile (published).	2	
17	Index Map to the Forest Survey of Singbhum, Chota Nagpore, Bengal, scale 1″=4 miles (published).	1	
	Berar.		
18	Map of Ellichpur Taluk, Berar, showing classification of District Forests, scale 1″=1 mile, revised edition (published).	1	
19	Map containing the villages of Gondwahir, Masona, Najarpur, Bhilkhera, and Pandri, in the Melghát Taluk, part of Sheet No. 27, scale 4″=1 mile (published).	1	
20	Map of the Chikalda plateau (including Forest Reserves and adjacent Villages), part of Sheet No. 20, scale 4″=1 mile (published).	1	
21	Map containing the Villages of Chachkhera and Kulamgana, in the Melghát Taluk, part of Sheet No. 20, scale 4″=1 mile (published).	1	
22	Map containing the villages of Gowlkhera and Bhopapur, part of Sheet No. 20, scale 4″=1 mile (in progress).	1	
23	Map containing the villages of Bhilkhera and Soarpani, part of Sheet Nos. 20 and 20 A, scale 4″=1 mile (sent to press).	1	

No.	Particulars.	No. of Sheets.	Remarks.
24	Map containing the villages of Opadkhera and Thapjhera, part of Sheets Nos. 20 and 20 A, scale 4″=1 mile (in progress).	1	
25	Map of the Melghát Taluk, Sheet No. 27, scale 2″=1 mile (in progress).	1	
26	Map of the Melghát Taluk, Sheet No. 20 S. E, scale 2″=1 mile (in progress).	1	
27	Map of the Melghat Taluk, Sheet No. 20 S. W, scale 2″=1 mile (in progress).	1	
28	Map of the Melghát Taluk, Sheet No. $\frac{20}{A}$ N. E, scale 2″=1 mile (in progress).	1	
29	Index Map of the Melghát, Berar, scale 1″=8 miles, revised edition (published).	1	
30	Maps of South Berar, showing Guru-Matergaon Forest, scale 4″=1 mile, Sheets 1, 2, and 3 (published).	3	
	Tracings made.		
31	Tracings made for various Forest and District Officers.	80	
	Maps coloured.		
32	Printed maps of various kinds coloured . .	2,101	
	Mounted Maps.		
33	Printed maps mounted in book form . . .	418	
	Area of Forests measured.		
34	Areas in map containing the villages of Silona and Gowlkhera, in the Melghát Taluk, Berar, scale 4″=1 mile.	1	

APPENDIX C.

List of Maps prepared for the London Exhibition of 1886, by W. H. Reynolds, Esq., F.R.G.S., Officiating Superintendent of Forest Surveys.

[*Not printed.*]

APPENDIX D.

Summary of Expenditure from 1st October 1885 to 30th September 1886, showing the amounts expended on Field and Office Work of the Forest Surveys (Imperial).

No	Months.	NORTH-WESTERN PROVINCES.				BENGAL.		PUNJAB.				General.	Total.	Remarks.
		Kumaun and Garhwal.		Saharanpur.	Bhagirathi.	Singbhum.		Bashahr.		Kalesar.				
		Field.	Office.	Field.	Office.	Field.	Office.	Field.	Office.	Field.	Office.			
		R	R	R	R	R	R	R	R	R	R	R	R	
1	October 1885	..	124	.	14	37	...	299	20	...	.	1,290	1,784	
2	November „	...	133	...	...	478	...	318	10	...	.	1,300	2,239	
3	December „	..	...	..	...	355	.	252	...	530	18	1,067	2,222	
4	January 1886	...	...	...	...	613	...	...	...	261	...	796	1,670	
5	February „	...	...	...	...	668	...	...	...	531	...	649	1,848	
6	March „	...	40	...	...	645	...	...	...	515	...	1,280	2,480	
7	April „	...	13	...	...	648	...	...	...	486	...	761	1,908	
8	May „	78	24	...	...	984	...	...	...	164	...	1,281	2,531	
9	June „	68	320	...	...	...	54	...	...	...	...	1,042	1,484	
10	July „	...	180	50	...	...	177	...	...	...	50	1,064	1,521	
11	August „	...	66	...	...	...	247	69	214	..	60	1,784	2,400	
12	September „	...	...	...	...	...	269	1,727	...	...	50	1,147	3,193	
	Total	146	900	50	14	4,428	747	2,625	244	2,487	178	13,461	25,280	

APPENDIX E.

Summary of Expenditure from 1st October 1885 to 30th September 1886, showing the amounts expended on Field and Office Work of the Forest Surveys (Berar).

No.	Months.	Field.	Office.	General.	Total.	Remarks.
		R	R	R	R	
1	October 1885	...	867	1,582	2,419	
2	November „	17	949	1,241	2,207	
3	December „	395	628	811	1,834	
4	January 1886	2,721	150	3,460	6,331	
5	February „	2,432	139	1,225	3,796	
6	March „	2,535	184	2,396	5,115	
7	April „	2,909	166	1,766	4,841	
8	May „	2,766	164	1,031	3,961	
9	June „	12,095	190	1,108	3,393	
10	July „	1,099	540	2,970	4,609	
11	August „	...	1,033	1,109	2,142	
12	September „	212	1,011	1,177	2,400	
	Total	17,181	6,021	19,876	43,078	

FORM No. 58.

Summary of Revenue and Expenditure of the Forest Survey Branch (Imperial) during 1885-86.

Receipts.

	R	a.	p.
I.—Timber and other Produce removed from the Forests by Government agency :—			
a. Timber	...		
b. Firewood and Charcoal	...		
c. Bamboos	...		
d. Sandal-wood			
e. Grass and other minor produce	...		
II.—Timber and other Produce removed from the Forests by Consumers or Purchasers :—			
a. Timber	...		
b. Firewood and Charcoal	...		
c. Bamboos	...		
d. Grazing and Fodder Grass	...		
e. Other minor produce	...		
III.—Confiscated, drift, and waif Wood	...		
IV.—Revenue from Forests not managed by Government :—			
a. Duty on Foreign Timber and other Forest Produce	...		
b. Revenue from Shared and Private Forests	...		
V.—Miscellaneous :—			
a. Fines and Forfeitures	...		
b. Refunds	80	8	0
c. Other sources	121	2	0
Total Receipts	201	10	0

Expenditure.

A.—Conservancy and Works.

I.—Timber and other Produce removed from the Forests by Government agency :—			
a. Timber	...		
b. Firewood and Charcoal	...		
c. Bamboos	...		
d. Sandal-wood	...		
e. Grass and other minor produce	...		
II.—Timber and other Produce removed from the Forests by Consumers or Purchasers	...		
III.—Confiscated, drift, and waif Wood	...		
IV.—Revenue from Forests not managed by Government :—			
a. Duty on Foreign Timber and other Forest Produce	...		
b. Revenue from Shared and Private Forests	...		
V.—Rent of Leased Forests and Payments to Shareholders in Forests managed by Government	...		
VI.—Live-Stock, Stores, Tools and Plant :—			
a. Purchase of Cattle	...		
b. Feed and keep of Cattle	472	0	4
c. Stores, Tools and Plant	628	2	11
VII.—Communications and Buildings :—			
a. Roads and Bridges	...		
b. Buildings	...		
c. Other works	...		
Carried forward	1,100	3	3

FORM No. 58—*continued.*

Summary of Revenue and Expenditure of the Forest Survey Branch (Imperial) during 1885-86—concluded.

A.—CONSERVANCY AND WORKS—*concluded.*

	R	a.	p.
Brought forward .	1,100	3	3
VIII.—Demarcation, Improvement, and Extension of Forests:—			
a. Demarcation	...		
b. Compensation for Land and Rights	...		
c. Surveys and Working-Plans	3,084	14	3
d. Plantations	...		
e. Protection from Fire	...		
f. Other works	...		
IX.—Miscellaneous:—			
a. Refunds	...		
b. Law Charges	...		
c. Other charges	345	12	3
TOTAL, A.—CONSERVANCY AND WORKS .	4,530	13	9

B.—ESTABLISHMENTS.

I.—Salaries:—			
a. Conservator	...		
b. Superior Officers	3,600	0	0
c. Subordinate Forest and Depôt Establishments . . .	7,064	14	5
d. Office Establishments	...		
e. Deputation and Special Allowances	...		
II.—Travelling Allowances:—			
a. Conservator	...		
b. Superior Officers	460	13	0
c. Subordinate Forest and Depôt Establishments . . .	2,054	8	6
d. Office Establishments	...		
III.—Contingencies:—			
a. Stationery	...		
b. Carriage of Tents and Records	178	6	5
c. Rents, Rates, and Taxes	...		
d. Pay of Police Guards	...		
e. Official Postage	184	3	0
f. Sundries	506	12	1
TOTAL, B.—ESTABLISHMENTS .	14,649	9	5
Grand Total of Expenditure .	19,180	7	2

Summary of Revenue and Expenditure of the Berar Forest Survey Division during 1885-86.

Receipts.

	R.	a.	p.
I.—Timber and other Produce removed from the Forests by Government agency:—			
a. Timber	...		
b. Firewood and Charcoal	...		
c. Bamboos	...		
d. Sandal-wood	...		
e. Grass and other minor produce	...		
Carried forward .	...		

FORM No. 58—*continued.*

Summary of Revenue and Expenditure of the Berar Forest Survey Division during 1885-86—continued.

Receipts—*concluded.*

	R.	a.	p.
Brought forward .	...		
II.—Timber and other Produce removed from the Forests by Consumers or Purchasers :—			
a. Timber	...		
b. Firewood and Charcoal	...		
c. Bamboos	...		
d. Grazing and Fodder Grass	...		
e. Other minor produce	...		
III.—Confiscated, drift, and waif Wood	...		
IV.—Revenue from Forests not managed by Government :—			
a. Duty on Foreign Timber and other Forest Produce . .	...		
b. Revenue from Shared and Private Forests	...		
V.—Miscellaneous :—			
a. Fines and Forfeitures	...		
b. Refunds	...		
c. Other sources	630	14	0
Total Receipts .	630	14	0

Expenditure.

A.—Conservancy and Works.

I.—Timber and other Produce removed from the Forests by Government agency :—			
a. Timber	...		
b. Firewood and Charcoal	...		
c. Bamboos	...		
d. Sandal-wood	...		
e. Grass and other minor produce	...		
II.—Timber and other Produce removed from the Forests by Consumers or Purchasers	...		
III.—Confiscated, drift, and waif Wood	...		
IV.—Revenue from Forests not managed by Government :—			
a. Duty on Foreign Timber and other Forest Produce . .	...		
b. Revenue from Shared and Private Forests	...		
V.—Rent of Leased Forests, and Payments to Shareholders in Forests managed by Government	...		
VI.—Live-Stock, Stores, Tools and Plant :—			
a. Purchase of Cattle	...		
b. Feed and keep of Cattle	1,184	11	5
c. Stores, Tools and Plant	1,446	15	7
VII.—Communications and Buildings :—			
a. Roads and Bridges	...		
b. Buildings	597	4	6
c. Other works	...		
VIII.—Demarcation, Improvement, and Extension of Forests :—			
a. Demarcation	...		
b. Compensation for Land and Rights	...		
c. Surveys and Working-Plans	6,463	3	0
d. Plantations	...		
e. Protection from Fire	...		
f. Other works	...		
Carried forward .	9,692	2	6

FORM No. 58—*concluded.*

Summary of Revenue and Expenditure of the Berar Forest Survey Division during 1885-86—concluded.

Expenditure—*concluded.*

	₹	a.	p.
Brought forward .	9,692	2	6
IX.—Miscellaneous:—			
a. Refunds	...		
b. Law Charges	...		
c Other charges	...		
TOTAL, A.—CONSERVANCY AND WORKS .	9,692	2	6
B.—ESTABLISHMENTS.			
I.—Salaries:—			
a. Conservator	...		
b. Superior Officers	12,860	0	0
c. Subordinate Forest and Depôt Establishments . . .	11,352	2	2
d. Office Establishments	...		
e. Deputation and Special Allowances	39	5	8
II.—Travelling Allowances:—			
a. Conservator	...		
b. Superior Officers	3,785	13	6
c. Subordinate Forest and Depôt Establishments . . .	3,373	11	1
d. Office Establishments	...		
III.—Contingencies:—			
a. Stationery	...		
b. Carriage of Tents and Records	193	12	0
c. Rents, Rates, and Taxes	1,005	0	0
d. Pay of Police Guards	...		
e. Official Postage	109	1	0
f. Sundries	528	10	8
TOTAL, B.—ESTABLISHMENTS . .	33,247	8	1
Grand Total of Expenditure . .	42,939	10	7

FORM No. 59.

Account Current of the Forest Survey Branch for the year 1885-86.

DR. CR.

	₹	a.	p.	₹	a.	p.		₹	a.	p.	₹	a.	p.
Opening Balance . . .	...			281	6	1	By Expenditure, as per Annual Summary . .	...			19,180	7	2
To IX Revenue, as per details in Annual Summary . .	...			201	10	0	„ Advances Recoverable .	...			7,588	1	2
SERVICE FUNDS.							ACCOUNT CURRENT—OTHER GOVERNMENTS.						
To Bengal Uncovenanted Service Family Pension Fund.	...			970	5	0	To Government of Punjab	...			0	8	0
FOREST CASH REMITTANCES (LOCAL).							„ Ditto North-Western Provinces and Oudh .	..			2	0	0
							„ Government of Bengal .	...			175	0	0
							„ Ditto Bombay .	...			57	3	10
To Forest Cheques drawn .	...			81	4	11							
Advances Recoverable .	...			7,442	13	9	INTER-DEPARTMENTAL TRANSFERS.						
							Civil Department.						
ACCOUNT CURRENT—OTHER GOVERNMENTS.							By Mathematical Instrument Department . .	...			119	2	0
To Government of North-Western Provinces and Oudh	...			29,334	12	11							

FORM No. 59—*concluded.*

Account Current of the Forest Survey Branch for the year 1885-86—concluded.

Dr.			Cr.		
	R a. p.	R a. p.		R a. p.	R a. p.
To Government of Punjab .	...	714 6 8	Berar Suspense Account.		
,, ,, Bengal .	...	2,651 10 0			
,, ,, Bombay .	...	57 3 10	By Expenditure for Melghât Survey . . .	42,939 10 7	...
Inter-Departmental Transfers.			,, Remittance to Ellichpur Treasury . . .	630 14 0	43,570 8 7
Civil Department.			,, Closing Balance . .	...	247 13 9
To Mathematical Instrument Department . . .	...	1,592 11 0			
Berar Suspense Account.					
To Melghât Survey Revenue .	630 14 0	...			
,, Remittance to Ellichpur Treasury	26,381 10 4	...			
To Remittance to Amraoti Treasury . . .	600 0 0	27,612 8 4			
Total .	...	70,940 12 6	Total .	...	70,940 12 6

FORM No. 61.

Outstandings and Liabilities on account of Contractors and Disbursers for 1885-86.

Division.	Department Debtor.			Department Creditor.			Balance Due.	
	At commencement of year.	Recoveries in cash and value of supplies and work done during the year.	At close of year.	At commencement of year.	Payments made during year.	At close of year.	To Department (Outstandings).	By Department (Liabilities).
		R a. p.	R a. p.	R a. p.	R a. p.	R a. p.	R a. p.	
Forest Surveys .	...	7,442 13 9	7,442 13 9	940 4 9	7,588 1 2	8,528 5 11	1,085 8 2	...
Total .	...	7,442 13 9	7,442 13 9	940 4 9	7,588 1 2	8,528 5 11	1,085 8 2	...

Government of India Central Printing Office.—No. 225 R. & A.—9-3-87.—275.